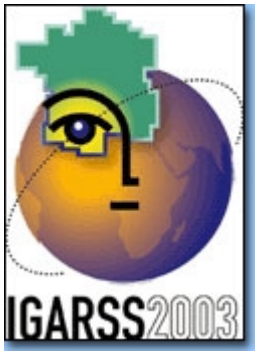
This year's theme was Learning Earth's Shapes and Colors. 149 topics were arranged into 7 sections, including:

- **Applications of Remote Sensing**
- **Mission and Programs**
- **Geoscience, Modeling, & Processing**
- **Data Processing & Algorithms**
- **Electromagnetic Problems**
- **Instrumentation & Techniques**
- **Policy, Societal Issues, & Education Initiatives**



A Calibration Algorithm Design and Analysis for VIIRS Thermal Emissive Bands Based on the EOS MODIS Approach

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Abstract **The Visible and Infrared Imager/Radiometer Suite (VIIRS) is a key instrument for the National Polar-orbiting Operational Environmental Satellite System (NPOESS). NPOESS is the next generation of US polar orbiting operational weather satellites. The VIIRS sensor has 22 spectral bands with wavelengths from 0.4 to 12 µm and nadir spatial resolution of 0.375 km (5 bands) and 0.75 km (17 bands). The first flight of the VIIRS will be on the NPOESS Preparatory Project (NPP), and the NPP data sets provide a bridge from the Earth Observing System (EOS) MODIS research and development program into NPOESS operational program. For the VIIRS Thermal Emissive Bands (TEB) in the infrared, the major change in the VIIRS design from MODIS is a transition to a rotating telescope fore-optics to replace a single-element scan mirror. The VIIRS TEB calibration equation for earth observations is developed using principals on which the MODIS TEB calibration is developed. The primary difference in the radiometric calibration concepts for VIIRS compared to MODIS is a weakly coupled sensitivity on VIIRS to the telescope optics temperatures.** ***(Abstract)***

Keywords-calibration, infrared, thermal infrared, VIIRS, MODIS

I. BACKGROUND

The VIIRS measurements lead to calibrated and earth-located data sets from which operational geophysical products are developed. These products are similar to those produced with MODIS data. Additional VIIRS requirements include imaging products which must function across the earth terminator. These VIIRS imaging products in turn require a stray light rejection capability of 10^5, and are met through the use of a high performance (3-mirror anastigmat) telescope. The VIIRS design is a single aperture, "whisk-broom" design that looks in-track using the spacecraft motion, and looks across-track with the rotating telescope assembly (RTA). Signal is coupled into fixed optics via a Half-Angle Mirror (HAM), rotating at half the RTA rate. The RTA refers to all optics forward of the HAM. The RTA rotates once each 1.786 s, and covers 11.87 km (at nadir) in-track on each scan, and covers a 3076 km swath across-track for each scan. The optics schematic is provided in Fig. 1.

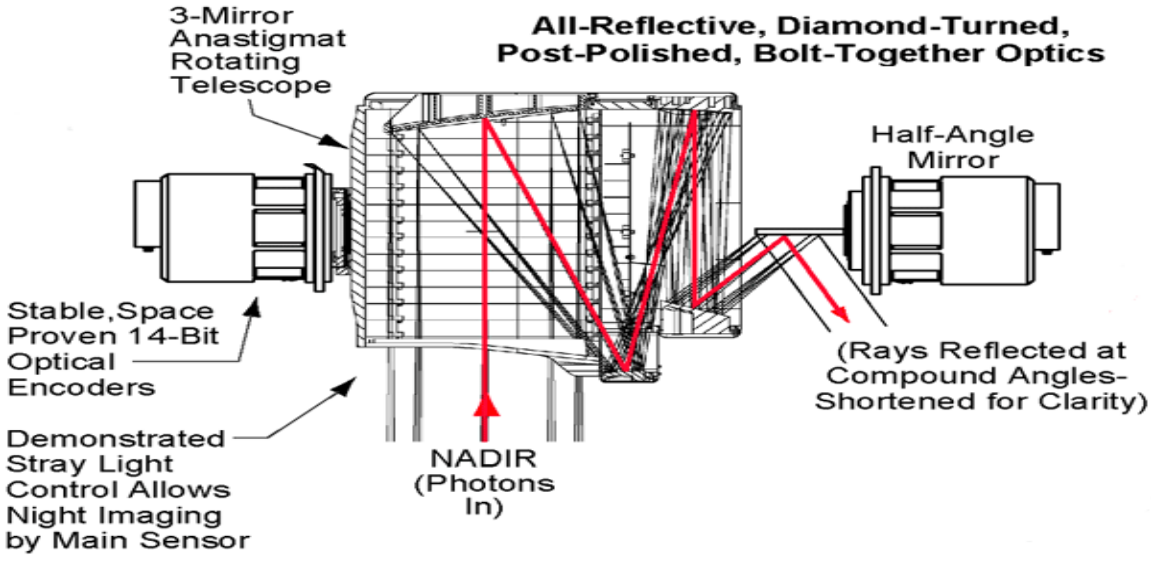

Figure 1. VIIRS 3-Mirror Anastigamt Rotating Telescope and Half-Angle Mirror as shown schematically at the NPP HomePage, http://jointmission.gsfc.nasa.gov/science/.